EXPLORING PEDAGOGICAL CONTENT KNOWLEDGE (PCK) AND CONTENT KNOWLEDGE (CK) OF CHINESE AS A FOREIGN LANGUAGE (CFL) TEACHERS IN TEACHING CHINESE PRONUNCIATION

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Abstract

Shulman (1986) proposed three kinds of knowledge that effective teachers should master: content knowledge (CK), pedagogical knowledge (PK), and pedagogical content knowledge (PCK). There have been quite a number of studies focusing on CK and PCK in the domain of mathematics [4], [1], [17], however, little is known about language teachers' PCK and CK in teaching the target language. In this article, we present a conceptualization of PCK and CK of CFL teachers in teaching Chinese pronunciation by using semi-structured interviews and questionnaires to elicit CFL teachers' (n=25) PCK and CK on teaching Chinese. Our methodological approach is based on a PCK-CK framework, in which PCK and CK are determined as the core elements. In line with our theoretical framework, the PCK investigation includes two parts: a semi-structured interview on three subscales, including the knowledge of Chinese tasks, knowledge of student misconceptions and difficulties, and knowledge of Chinese pronunciation-specific instructional strategies; and a questionnaire the items of which were selected from reviewed literature on instructional pronunciation strategies (IPS) by testing the relationship between CFL teachers' implemented IPS in-class and in the literature. Our CK investigation are constructed as a semi-structured interview to cover relevant CFL pronunciation areas (e.g., initials, finals, tones, intonation, and stress). The results show that CFL teachers emphasize the importance of CK and PCK in teaching Chinese pronunciation, but we also notice that some teachers are weakest in terms of CK in Chinese pronunciation domain while a number of teachers are weakest with regard to PCK to have enough IPS on solving students' pronunciation problems.

Key words: content knowledge (CK), pedagogical content knowledge (PCK), Chinese as a foreign language (CFL) teachers, Chinese pronunciation

1 INTRODUCTION

Teachers are significantly different in their capability to improve students learning and outcomes [14]. Researchers have studied what knowledge teachers should acquire in order to improve their teaching. Although the precise nature of teachers' knowledge is still uncertain [8], following Shulman's [18], [19] theoretical framework, a theoretical division is presented as follows: content knowledge (CK) and pedagogical content knowledge (PCK). Defined by Shulman [18], [19], content knowledge (CK) refers to teaches' understanding of the subject domain he or she teaches, and pedagogical content knowledge (PCK) represents the knowledge of how teachers can make the subject matter accessible to students. Two facets of PCK are identified, including knowledge of students' subject-specific conceptions and misconceptions, and knowledge of subject-specific instructional strategies [11], [15].

Research on PCK and CK have mainly concentrated on mathematics and sciences areas [3], [17], [1], [5], and several aspects have been identified to be useful and important for successful mathematics and science instructions [21], [12], [6], [10], such as selecting appropriate tasks for students, noticing student misconceptions and comprehension difficulties, and providing appropriate subject-specific instructional strategies. However, the issue of how these findings can be transferred to other subjects remains unsolved. In the domain of foreign language teaching, the special characteristics of teaching content and medium make foreign language teaching courses different from subjects like mathematics and sciences [9]. In the foreign language teaching classroom, language is used both as a subject matter and as a teaching tool, which means teachers need to pay attention to the language forms and the content of the students' utterance at the same time [20]. Besides the unique feature of the content and medium in the foreign language teaching domain, strategies implemented by teachers are also

different from those teaching other subjects. Oral and written production are the main focuses of foreign language teaching and this makes the strategies used by teachers have to be unique and specific in order to support these two focuses. However, although the subject of foreign language teaching is so distinctive from teaching other subjects, research on the PCK and CK of foreign language teachers is rather limited. Qualitative and quantitative instruments have been used to measure PCK and CK of foreign language teachers, especially for English as a foreign language teachers [2], [13], [7]. No studies have been found to explore CFL teachers' PCK and CK, neither teaching Chinese as a whole nor teaching any aspects of Chinese language. Therefore, this study focuses on discovering and measuring CFL pronunciation teachers' PCK and CK. More specifically, this study investigates how CFL pronunciation teachers' PCK and CK is conceptualized.

2 METHODOLOGY

Participants

The present analyses are based on data collected from 25 CFL teachers from different countries. Among the 25 CFL teachers, 11 teachers taught Chinese at Flanders' higher education institutions, and the remaining 14 teachers at higher education institutions from other countries (see table 1). Nearly two thirds of the 25 teachers were female and just over one third were male. The average teaching experience age of participating teachers was 9.

Data collection of PCK and CK

PCK interviews. In line with our theoretical framework, the PCK interviews contained three subscales: knowledge of student misconceptions and difficulties (Student), the knowledge of Chinese pronunciation tasks (Task), and knowledge of Chinese pronunciation-specific instructional strategies (Instruction). Knowledge of students' pronunciation problems was investigated by presenting teachers with six reading audio-recordings from three different language levels (beginning, intermediate, and advanced) of CFL students. As to knowledge of Chinese pronunciation tasks, participating teachers were asked to list as many different ways of solving the six students' pronunciation problems as possible. Knowledge of Chinese pronunciation-specific instructional strategies were acquired by one question requiring teachers to present strategies in terms of each Chinese pronunciation aspect. Table 1 presents a list of all the PCK interview questions concerning the theoretical framework. In order to link the reviewed strategies in the literature to the real classroom teaching, a questionnaire was used to test to what extent the participating CFL teachers use the strategies researched by CFL pronunciation researcher in their CFL pronunciation interventions.

Table 1. PCK subscales and interview questions.

PCK subscales	Interview questions
S1. the knowledge of Chinese pronunciation tasks	What strategies do you implement in class to teach each aspect? Please give one or two examples to explain the implementation of each strategy.
S2. Knowledge of student misconceptions and difficulties	Which aspect of pronunciation do the students have problems with in each stimulus?
S3. knowledge of Chinese pronunciation-specific instructional strategies	What strategies will you implement with regard to these pronunciation problems? Please list the strategies.

CK interviews. We conceptualized content knowledge as in-depth background knowledge of the contents of Chinese pronunciation aspects. In our model, CK includes domain-specific knowledge and in-depth domain-specific knowledge [18]. Two open-ended questions were constructed to cover relevant Chinese pronunciation content areas (e.g., initials, finals, tones, intonation, stress) and to integrate the whole pronunciation teaching in a systematic and qualified way.

Scoring scheme. All the open-ended questions were coded by two raters independently; in the event of rater disagreement, consensus was reached through discussion. Two open-ended CK questions with no response or an incorrect response were scored 0; each correct answer was scored 1. Partial credit was considered in all example items. Coding options developed for the open-ended questions

were derived from the literature whenever possible. If the participant answered several correct responses to one question, the sum of the correct answers was calculated. The PCK questions with no response or an incorrect response were also scored 0; each correct answer was scored 1. Same response (for questions requiring different answers, e.g., the multiple strategies for solving students' pronunciation problems) of different questions was only scored once.

Procedure. The interview of PCK and CK was conducted individually either in a separate room at the participants' institute or via skype-meeting when it was not possible to conduct an interview face-to-face. The average time required to finish the interview was about 3 hours. Interviews were recorded at the same time for data analysis.

3 RESULTS

3.1 *Descriptive Findings of CFL teachers' PCK on Teaching Chinese Pronunciation*

Data analysis of the CFL teachers' answers on PCK interviews revealed that CFL teachers are capable to find the mistakes made by students and categorize these mistakes based on their teaching experience. This suggests that teachers do have knowledge of students' common errors when they teach students of similar developmental levels. Various instructional strategies were provided by teachers to solve students' mistakes, but we also noticed that a few strategies were used by each teacher, such as repetition, and one-to-one correction. Intonation and stress are most teachers' weakest area both on PCK and CK, and the instructional strategies they used to solve the students' errors were rather limited, only one teacher used "watching film and dubbing" strategy to train students' intonation. This was probably caused by the arrangements of teaching Chinese pronunciation aspects, and that most of the interviewed teachers did not allot enough time to teach students' intonation and stress. One teacher answered that she skipped these two aspects when teaching beginning-level CFL students since she thought that the students' language proficiency was too limited, and that the focus of this level should be on other aspects, for example tones, initials, and finals.

3.2 *Descriptive Findings of CFL teachers' CK on Teaching Chinese Pronunciation*

Regarding the quality of CFL teachers' CK, the answers of the participants of the interviews showed that most of CFL teachers seem to lack the conceptual knowledge about the Chinese pronunciation concepts (e.g., intonation), and not many answers were given by each teacher. For example, more than half of the interviewed teachers cannot tell the number of Chinese initials and the categories of Chinese finals. Comparing the answers concerning the five Chinese pronunciation aspects, intonation and stress were the least understandable aspects compared to their interpretation on Chinese tones. The teachers' answers on questions regarding Chinese tones obviously were more accurate concerning the content and also in terms of the quantity.

4 CONCLUSIONS

In the present study, we constructed and implemented semi-structured interviews to explore the pedagogical content knowledge and content knowledge of CFL teachers in teaching Chinese pronunciation. We used a subject-specific approach which is in line with general educational psychological theories that are specified for specific subjects. Our findings show that CFL teachers' CK is rather limited compared to their PCK and differ concerning each pronunciation aspect. CFL teachers shows sufficient PCK knowledge when dealing with student's errors and finding solutions.

REFERENCES

[1] J. Baumert, M. Kunter, W. Blum, M. Brunner, T. Voss, A. Jordan, ... & Y. M. Tsai, "Teachers' mathematical knowledge, cognitive activation in the classroom, and student progress," *American educational research journal*, vol. *47*, no. 1, pp. 133-180, 2010.

[2] S. Borg, “The distinctive characteristics of foreign language teachers,” *Language Teaching Research*, vol. *10*, no. 1, pp. 3-31, 2006.

[3] K. R. Daehler, J. I. Heller, & N. Wong, “Supporting growth of pedagogical content knowledge in science,” In *Re-examining pedagogical content knowledge in science education* (pp. 55-69). Routledge, 2015.

[4] H. C. Hill, S. G. Schilling, & D. L. Ball, “Developing measures of teachers’ mathematics knowledge for teaching,” *The elementary school journal*, vol. *105*, no. 1, pp. 11-30, 2004.

[5] H. C. Hill, S. G. Schilling, & D. L. Ball, “Effects of teachers’ mathematical knowledge for teaching on student achievement,” *American educational research journal*, vol. *42*, no. 2, pp. 371-406, 2005.

[6] V. Kind, “Preservice science teachers’ science teaching orientations and beliefs about science,” *Science Education*, vol. *100*, no. 1, pp. 122-152, 2016.

[7] J. König, & C. Kramer, “Teacher professional knowledge and classroom management: On the relation of general pedagogical knowledge (GPK) and classroom management expertise (CME),” *ZDM*, vol. *48*, no. 1-2, pp. 139-151, 2016.

[8] S. Krauss, J. Baumert, & W. Blum, “Secondary mathematics teachers’ pedagogical content knowledge and content knowledge: validation of the COACTIV constructs,” *Zdm*, vol. *40*, no. 5, pp. 873-892, 2008.

[9] D. L. Freeman, & L. Cameron, “Research methodology on language development from a complex systems perspective,” *The Modern Language Journal*, vol. *92*, no. 2, pp. 200-213, 2008.

[10] E. Lee, & J. A. Luft, “Experienced secondary science teachers’ representation of pedagogical content knowledge,” *International Journal of Science Education*, vol. *30*, no. 10, pp. 1343-1363, 2008.

[11] D. Loewenberg Ball, Thames, M. H., & Phelps, G, “Content knowledge for teaching: What makes it special?” *Journal of teacher education*, vol. *59*, no. 5, pp. 389-407, 2008.

[12] R. E. Mayer, “Should there be a three-strikes rule against pure discovery learning? *American psychologist*,” vol. *59*, no. 1, pp. 14, 2004.

[13] B. Mullock, “The pedagogical knowledge base of four TESOL teachers,” *The modern language journal*, vol. *90*, no. 1, pp. 48-66, 2006.

[14] B. Nye, S. Konstantopoulos, & L. V. Hedges, “How large are teacher effects?” *Educational evaluation and policy analysis*, vol. *26*, no. 3, pp. 237-257, 2004.

[15] S. Park, & J. S. Oliver, “Revisiting the conceptualisation of pedagogical content knowledge (PCK): PCK as a conceptual tool to understand teachers as professionals,” *Research in science Education*, vol. *38*, no. 3, pp. 261-284, 2008.

[16] S. Schmelzing, J. H. van Driel, M. Jüttner, S. Brandenbusch, A. Sandmann, & B. J. Neuhaus, “DEVELOPMENT, EVALUATION, AND VALIDATION OF A PAPER-AND-PENCIL TEST FOR MEASURING TWO COMPONENTS OF BIOLOGY TEACHERS’PEDAGOGICAL CONTENT KNOWLEDGE CONCERNING THE “CARDIOVASCULAR SYSTEM,” *International Journal of Science and Mathematics Education*, vol. *11*, no. 6, pp. 1369-1390, 2013.

[17] W. H. Schmidt, M. T. Tatto, K. Bankov, S. Blömeke, T. Cedillo, L. Cogan, ... & M. Santillan, “The preparation gap: Teacher education for middle school mathematics in six countries,” *MT21 Report. East Lansing: Michigan State University*, vol. *32*, no. 12, pp. 53-85, 2007.

[18] L. S. Shulman, “Those who understand: Knowledge growth in teaching. *Educational researcher*,” vol. *15*, no. 2, pp. 4-14, 1986.

[19] L. S. Shulman, “Knowledge and teaching: Foundations of the new reform,” *Harvard educational review*, vol. *57*, no. 1, pp. 1-23, 1987.

[20] E. Tarone, & D. Allwright, “Second language teacher learning and student second language learning: Shaping the knowledge base,” *Second language teacher education: International perspectives*, pp. 5-23, 2005.

[21] G. Williams, “Identifying tasks that promote creative thinking in mathematics: a tool,” *Mathematics education in the South Pacific*, vol. *2*, pp. 698-705, 2002.